Ice Jams/Flooding

What is an ice jam?

Pieces of floating ice carried with a stream's current can accumulate at any obstruction to the stream flow developing an ice jam. These ice jams can accumulate near river bends, mouths of tributaries, points where the river slope decreases, downstream of dams, and upstream of bridges or obstructions. The water held back can cause flooding upstream, and if the obstruction suddenly breaks, flash flooding can occur downstream.

When was the last time ice jam flooding occurred in Michigan?

Ice jams occur every year in Michigan. In January 2013, significant ice jams formed on the Muskegon River near Rogers Heights, Michigan. Flooding from the ice jams on the Muskegon River near Rogers Heights impacted over 60 homes and was reported to have caused approximately 2.6 million dollars in damages. Over the past several years, ice jams have occurred on the Flat River near Smyrna, Looking Glass River near Eagle, Maple River near Maple Rapids, Chippewa River near Mt. Pleasant, Grand River near Portland, Grand River at Comstock Park, Grand River between Grand Haven and Robinson Township, Muskegon River near Evart, and the St. Joseph River near Burlington. Historically, ice jams have also caused flooding on the River Raisin, Thornapple, and Kalamazoo rivers.

What time of year is an ice jam likely to occur?

In Michigan, an ice jam can occur anytime from early winter to late spring depending upon changes in temperatures that cause alternate freezing and melting of water surfaces. The most likely times are in early winter before the surfaces are completely frozen and in early spring when the ice cover begins to break up due to melting**.**

What effect does snow have on flooding potential?

When snow melts, it adds water to the ground that drains away in the same way as water from rainfall. On average, one inch of fresh snowfall contains about a tenth of an inch of water. However, as snow accumulates and becomes compacted during the winter, the ratio of snow to water decreases. Thus, 10 inches of snow remaining on the ground into early spring may contain as much as five inches of water. A deep snowpack in late spring increases the flood potential.

How fast does snow and ice melt?

Three consecutive days with the maximum temperature of about 50 degrees would create enough melting to cause ice breakup on small streams. These conditions would also melt two inches of snow.

What happens when rain falls on top of snow?

Air temperature is still the most important factor in melting snow. Rain does not usually add much heat to the process. At 40 degrees, one inch of rain will only produce a tenth of an inch of added water from snow melt. At the same time, frozen ground will result in more of the available water running off directly to streams.

What are the main factors that contribute to snowmelt flooding?

1. High soil moisture in the fall
2. Significant frost in the ground
3. High water content of existing snow cover
4. Rapid, continuous melting
5. Moderate to heavy rain during melting
6. Ice jams

The 2018 Hydrologic Outlooks for the spring snowmelt flood potential will be issued in February and March and can be found at www.weather.gov